Docket No.: 22106-00042-US
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Viaro et al.

Application No.: 10/658,260 Art Unit: 2832

Filed: September 10, 2003 Examiner: J. Nguyen

For: DEVICE AND METHOD FOR MEASURING CURRENT

AMENDMENT

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the outstanding Office Action, mailed April 17, 2006, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page **2** of this paper.

Remarks/Arguments begin on page **5** of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application:

LISTING OF CLAIMS

1-13. (Canceled).

14. (Currently amended) A device for measurement of current in a conductor, comprising:

means for detecting a current;

means for transmission of a signal indicative of the current;

electronic means for control, acquisition and processing of the signal indicative of current; and

connecting means for feeding the device and for communication,

wherein the device includes means for feeding the means for detecting a current in an intermittent manner, ~~and according to a~~

wherein the frequency of feeding is predefined ~~frequency that~~ and depends ~~from~~ on an accuracy of the measurement of current to be performed and energy savings to be achieved, and

wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed.

15. (Previously presented) The device according to claim 14, wherein the means for detecting a current includes an insulating support and at least one magnetic field sensor.

16. (Previously presented) The device according to claim 15, wherein the magnetic field sensor is a Hall sensor.

17. (Previously presented) The device according to claim 14, wherein the means for feeding are controlled by the electronic means for the control, acquisition and processing of said signal indicative of the current.

18. (Previously presented) The device according to claim 14, wherein the means for the transmission of a signal indicative of the current are linked to means of adaptation of the signal.

19. (Previously presented) The device according to claim 18, wherein the means of adaptation of the signal are connected to means of analog-to-digital conversion.

20. (Previously presented) The device according to claim 14, wherein the connecting means include feeding means and means of bidirectional communication.

21. (Previously presented) The device according to claim 20, wherein the feeding means are fed by a current transformer positioned on a conductor.

22. (Previously presented) The device according to claim 21, wherein the conductor is a conductor exposed to measurement.

23. (Previously presented) The device according to claim 20, wherein the feeding means are linked to an external feeding source.

24. (Previously presented) An automatic low voltage circuit breaker including one or more devices according to claim 14, the one or more devices being connected to a communication bus, in its turn connected to a protection device through an interface.

25. (Previously presented) A method for the for the measurement of the current in an electric conductor through a device according to claim 14, comprising:

feeding the device and bringing the device to running condition;

maintaining the feeding for a period of time r;

bringing the device in a stand-by condition with feeding interruption.

26. (Previously presented) The method according to claim 25, wherein the period of time T is divided in a first time fraction τ_1 of stabilization of the sensor and in a second time fraction τ_2 of reading and transmission of the signal.

REMARKS

Claims 14-26 are pending in the case. Claims 1-13 were previously canceled. Reconsideration is respectfully requested.

In the outstanding Office Action claims 14-18 and 20-23 were rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 6,836,137 (Hartmann) in view of U.S. Patent No. 6,570,373 (Viola); claim 19 was rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann in view of Viola and further in view of U.S. Patent No. 5,548,279 (Gaines); claims 24 -26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman in view of Viola and further in view of U.S. Patent No. 4,706,073 (Vila Masot).

Claim Rejections under 35 U.S.C. Section 103

Claims 14-18 and 20-24 were rejected under 35 U.S.C. 102(e) as being anticipated by Hartmann in view of Viola. Applicants respectfully traverse the rejection.

Claim 14 has been amended to clarify the invention. In particular, claim 14 has been amended to recite:

> wherein the device includes means for feeding the means for detecting a current in an intermittent manner, ~~and according to a~~
>
> wherein the frequency of feeding is predefined ~~frequency that~~ and depends ~~from~~ on an accuracy of the measurement of current to be performed and energy savings to be achieved, and
>
> wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed.

Support for the amendment is provided at least at in paragraph [0048] and original claim 1 of the specification; and shown at least in FIG. 4. Therefore, it is respectfully submitted that the amendment raises no question of new matter.

Hartmann discloses a current measuring device in the form of a Hall sensor that is disposed in an individual current/voltage supply line device with a common current/voltage

supply unit.[1] In particular, Hartmann discloses a testing device comprising: means for detecting the current; means for transmission of a signal indicative of the current; and electronic means for feeding the device and communication. Specifically, Hartmann simply disclose the use of a programmable power supply unit or the use of shared power supplies.[2]

In addition, Hartmann teaches the use of Hall current sensors having different measurement ranges. Further, Hartmann discloses the measurement of each Hall sensor is then selected by the evaluation/control unit **68** depending on the saturation status of the Hall sensor.[3] Specifically, Hartmann discloses the Hall sensors are fed in parallel.[4]

However, Hartmann nowhere discloses, as claim 14 recites:

> wherein the device includes *means for feeding the means for detecting a current in an intermittent manner*,
> wherein *the frequency of feeding is predefined and depends on an accuracy of the measurement of current to be performed and energy savings to be achieved*, and
> wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed (emphasis added).

That is, Hartman does not disclose the "means for feeding the means for detecting a current in an intermittent manner" and that "the frequency of feeding is predefined and depends on an accuracy of the measurement of current to be performed and energy savings to be achieved," as recited in claim 14. Therefore, it is respectfully submitted that Hartmann does not disclose the claimed invention and that claim 14, and claims dependent thereon, patetably distinguish thereover.

[1] Hartmann at ABSTRACT.
[2] *Id.* at column 3, lines 38-43.
[3] *Id.* at see column 5, lines 5-10.
[4] *Id.* at Figure 1.

The outstanding Office acknowledges deficiencies in Hartmann and attempts to overcome these deficiencies with Viola.[5] However, as discussed below, Viola cannot overcome all of the deficiencies of Hartmann.

Viola discloses a current sensor programmable through a connector.[6] In particular, Viola discloses an electric current sensor **38** with an inductive pickup device.[7] Further, Viola discloses the flux gap **44** of the split toroid **40** is a digitally programmable Hall Effect IC **46**.[8] Furthermore, Viola discloses that, following the completed assembly of the current sensor with the pins of the IC **46** accessible at a terminal block **36**, the output offset, gain and temperature compensation of the IC **46** can be adjusted and set.[9] Moreover, Viola discloses a pin **I1** is connected to a terminal **T1**, the pins **I2** and **I3** are connected to a pair of terminals **T2** and **T4**, and the pin **I4** is connected to a terminal **T3**.[10]

In addition, Viola discloses a programmer **50** for programming the IC **46**.[11] Further, Viola discloses programming ports of the programmer **50** are connected to the terminals **T1** through **T3** on the terminal block **36**.[12] Moreover, Viola discloses an RS232 serial interface port connected with a processor **52** of a personal computer **54**.[13]

However, Viola nowhere discloses, as claim 14 recites:

> wherein the device includes *means for feeding the means for detecting a current in an intermittent manner*,
> wherein the frequency of feeding is predefined and depends on an accuracy of the measurement of current to be performed and energy savings to be achieved, and

[5] Outstanding Office Action at paragraph 2, page 3, lines 3-8
[6] Viola at ABSTRACT.
[7] *Id.* at column 3, lines 9-10.
[8] *Id.* at column 3, lines 13-14.
[9] *Id.* at column 3, lines 16-18.
[10] *Id.* at column 3, lines 18-20.
[11] *Id.* at column 3, lines 37-38.
[12] *Id.* at column 3, lines 39-40.
[13] *Id.* at column 3, lines 40-42.

> *wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed* (emphasis added).

That is, Viola does not disclose the "means for feeding the means for detecting a current in an intermittent manner" and that "*wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed*," as recited in claim 14.

In addition, it is respectfully submitted that Viola discloses a current sensor that is *always* powered by supply voltage $\mathbf{V_{DD}}$ and when the supply voltage reaches a higher voltage level, a programming pin of the current sensor is enabled. That is, as discussed above, Viola discloses a current sensor programmed with programmer **50** and interfaced with a processor **52** of a personal computer **54**.[14]

In contrast to Viola, the claimed invention is fed/programmed in an "intermittent manner," as recited in claim 14. Further, the claimed invention is fed/programmed during some periods of time and, at times, "means for detecting a current are *not* fed," as recited in claim 14 (emphasis added). That is, "*the means for detecting a current are kept on hold when the means for detecting a current are not fed,*" as recited in claim 14, and thus, Viola teaches away from the function of the claimed invention.

Therefore, it is respectfully submitted that Viola does *not* overcome all of the deficiencies of Hartmann and thus also does not disclose the claimed invention. Therefore, it is respectfully submitted that neither Hartmann nor Viola, whether taken individually or in combination, disclose, suggest or make obvious the claimed invention and that claim 14, and claims dependent thereon, patentably distinguish thereover.

Claim 19 was rejected under 35 U.S.C. 103(a) as being unpatentable over Hartmann in view of Viola and further in view of Gaines. Applicant respectfully traverses the rejection.

[14] *Id.* at column 3, lines 40-42.

Claim 19 is ultimately dependent upon claim 14. As discussed above, neither Hartmann nor Viola nowhere discloses all the limitations of claim 14. Therefore, at least for the reasons above, Hartmann and Viola also does not disclose claim 19.

The outstanding Office acknowledges deficiencies in Hartmann and Viola and attempts to overcome these deficiencies with Gaines. However, as discussed below, Gaines cannot overcome all of the deficiencies of Hartmann and Viola.

Gaines discloses a method and apparatus for detecting a power line.[15] In particular, Gaines discloses a power line detecting apparatus that includes a sensing means **16** for detecting the magnetic field generated by the current conducted through power lines **12**.[16] Further, Gaines discloses a controller **60**, memory device **62** and analog-to-digital converter **64**.[17]

However, Gaines nowhere discloses, as recited in claim 19:

> wherein the device includes *means for feeding the means for detecting a current in an intermittent manner*,
> wherein the frequency of feeding is predefined and depends on an accuracy of the measurement of current to be performed and energy savings to be achieved, and
> *wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed* (emphasis added).

Thus, Gaines cannot overcome all of the deficiencies of Hartmann and Viola. Therefore, it is respectfully submitted that none of Hartmann, Viola or Gaines, whether taken alone or in combination, disclose, suggest or make obvious the claimed invention and that claim 19, and claims dependent thereon, patetably distinguish thereover.

Claims 24 -26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hartman. in view Viola and further in view of Vila Masot.

[15] Gaines at ABSTRACT.
[16] *Id.* at FIG. 2; column 4, lines 19-23.
[17] *Id.* at FIG. 3; column 4, lines 18-44.

Claims 24-26 are ultimately dependent upon claim 14. As discussed above, neither Hartmann nor Viola , whether take alone or in combination discloses all the limitations of claim 14. Therefore, at least for the reasons above, Hartmann nor Viola do not disclose all the limitations of claims 24-26.

The outstanding Office acknowledges deficiencies in Hartmann and Viola and attempts to overcome these deficiencies with Vila Masot. However, as discussed below, Vila Masot cannot overcome all of the deficiencies of Hartmann and Viola.

The outstanding Office Action acknowledges other deficiencies in Hartmann and Viola and attempts to overcome those deficiencies with Vila Masot. However, Vila Masot cannot overcome the deficiencies of Hartmann and Viola as will be discussed below.

Vila Masot discloses an alarm system used in conjunction with a circuit breaker panel box indicating the presence of an overload condition.[18] In particular, Vila Masot discloses a light sensor or a plurality of light sensors **40** is mounted on the inside of the circuit panel door **42**.[19] In addition, Vila Masot discloses the circuit panel further includes a plurality of circuit breaker switches **44** and a light-emitting diode, electroluminescent device **46** or similarly illuminated lamp associated with each switch.[20]

However, Vila Masot nowhere discloses, as claim 14 recites:

> wherein the device includes *means for feeding the means for detecting a current in an intermittent manner*,
> wherein the frequency of feeding is predefined and depends on an accuracy of the measurement of current to be performed and energy savings to be achieved, and
> *wherein the means for detecting a current are kept on hold when the means for detecting a current are not fed* (emphasis added).

[18] Vila Masot at ABSTRACT.
[19] *Id.* at column 4, lines 2-4.
[20] *Id.* at column 4, lines 2-4.

Thus, Vila Masot cannot overcome the deficiencies of Hartmann and Viola.

Therefore, it is respectfully submitted that none of Hartmann, Viola and Vila Masot, whether taken alone or in combination, disclose, suggest or make obvious the claimed invention and that claims 24-26, and claims dependent thereon, patentably distinguish thereover.

Conclusions

Applicant believes there is no charge due with this response. However, if a charge is due, please charge our Deposit Account No. 22-0185, under Order No. 22106-00042-US1 from which the undersigned is authorized to draw for any fees that are due with this response.

Dated: July 17, 2006
476771_1

Respectfully submitted,

By___/Myron Keith Wyche/_____
Myron Keith Wyche
Registration No.: 47,341
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant